University Enhancement System using a Social Networking Approach: Extending E-learning

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Abstract

The proliferation of e-learning systems in both learning institutions and companies has contributed a lot to the acquisition and application of new skills. With the growth in technology, especially the internet, e-learning systems are only getting better and having more impact on the users.

This paper suggests an approach to e-learning that emphasizes active and open collaboration, and also the integration of other services that aid or contribute to the learning process. This approach aims at having an extended and enhanced learning environment that is tied or connected to other systems within the immediate environment or otherwise.

We illustrate the possibility and usability of such system in a university, such that other important administrative systems are integrated into the e-learning system, and collaboration is open to both academic and non-academic personnel's.

Keywords: Social Networking, Integration, eLearning, Learning, Collaboration, Web 2.0, Universities

Introduction

Several discussions, opinions and projects have emerged in areas of e-learning especially from a social networking context, and application of ICT to solve both academic and administrative problems of schools, most notable higher institutions of learning. According to OECD (2005), the impact of ICT on tertiary education has been felt more in administrative services like admission, registration, payment of fees etc, than learning and true information dissemination. The level of adoption of e-learning is still in the infant especially by universities in the developing countries, basically because of the poor application of ICT and other social factors that inhibits the implementation of information technologies.

Although, recently, a large number of these universities are now making use of the internet for enhancing administrative services, the absence of a standard platform/system either on their intranet (within the campus) or internet (for access on/off campus) to accommodate a new learning paradigm and administrative approach, is lacking. However, the

internet experience is daily increasing as people (students, lecturers, administrative staffs and others) get more familiar with the different tools available on the internet. And with the birth of the new internet termed Web 2.0, which according to Anderson (2007), Brown & Adler (2008), and O'Reilly (2005) could facilitate a change of paradigm in learning; from a top-down system focused in teachers and established knowledge, to a networked approach where teachers should change their roles to become coaches and facilitators of the learning process. It is obvious that the traditional pedagogical approach is no longer meeting the needs to prepare young learners to function effectively and satisfactorily in today's hectic labour market (Aviram, Ronen, Somekh, Winer, & Sarid, 2008).

Research has shown that most newly proposed/developed learning and administrative systems for higher institutions are built on a new (different) pedagogical model, which argues a personalized and social approach while leveraging and incorporating Web 2.0 tools. We suggest in this paper that to effectively impact the learning pattern of higher institutions, the focus should not only be on the students and their lecturers (the academic community), but also the non-academic or administrative community within the institution should be considered and integrated into the system. We therefore advocate for a system where several learning barriers can be eliminated by opening the learning environment to include non-academic staffs (who can contribute immensely to the entire learning experience), and integrating the key departments/sections (academic and administrative) into the learning system with a view to improving the information flow. This would provide students with relevant information alongside large academic resources and also aid the workers in performing their activities effectively.

Considering our selected case study, a private university in the eastern part of Nigeria that has a total population of about 5000 students, spread across 4 schools and 15 departments. 90 percent of the students reside on campus while others are non-resident students. The university has invested a lot of money in information technology; presently the university has an online portal where registration for semester is done, including payment of fees, accommodation and course selection, and class timetabling. The portal is accessible using the university's intranet or over the internet, however, the portal is disengaged when the registration activity ends. This obviously manifests the university's concern for enhancing the registration process (administrative) rather than the learning process (academics). While conducting our research on this institution, we also realized that not only is there the absence of a proper functioning e-learning system of any kind, other administrative units like campus life, medical services, student affairs, guidance and counselling and several others that are closely related to the academic activities suffer from the lack of application or use of appropriate technologies. As a result of this, relevant information needed by the students and other staffs are either not available when needed or available but ignored due to the stress involved in getting the information. This menace affects the overall set academic objectives and impairs the goal of any existing or new e-learning system, and it is proved by the fact that students do not only engage in academic activities but also relate with the entire activities/services that exist within the institution.

Therefore a system that builds on known, argued and implemented standards and approach that seeks to take e-learning systems beyond traditional learning management systems by adopting a social approach, will help eliminate the problems that prevent students from achieving the optimum learning experience. This is attained by providing access to academic resources, as well as other related information regarding their life in the university. This approach extends the idea of Personal Learning Environment (PLE) which applies to students and adds a system we call "Personal Working Environment (PWE)" which suits workers in the institution.

The system discussed in this paper consists of the following ideas:

- Extending the collaboration in e-learning systems (especially customized e-learning systems) to include everyone within the institution. Notable non-academic personnel's, whom though are not lecturers, are knowledgeable in their respective disciplines and can contribute to the learning process by sharing experiences and case studies.
- Integration of other services, basically the non-academic /administrative services into the e-learning system such that information flow is enhanced.

Overview of Existing Learning Systems

E-learning has come a long way, and it is daily experiencing different innovations and developments. According to Dalsgaard (2006), one approach to e-learning is the use of LMS (Learning Management System) which are not alike and could be used in different ways. The common idea however is that they are organized and managed within an integrated system.

Several universities, especially those in the developed countries have different e-learning platforms which are either acquired virtual learning environments or e-learning systems like WebCT, Scholar360, Moodle, and Blackboard. Blackboard is widely used by learning institutions and it is easily adapted to the institutions web presence. One of the several institutions that uses blackboard is the Canterbury Christ Church University, and details can be seen at http://www.canterbury.ac.uk/support/learning-teaching-enhancement-unit/blackboard/index.asp Another example is the **MUSE** (*My Sheffield University Environment*) University of Sheffield, UK. MUSE provides online access to academic resources and applications like emails, calendar etc. The benefits of this systems are numerous as the idea of re-structuring the traditional teaching model to suit the modern age learners as brought about the positive learning experience envisaged, which according to Ahron et al., (2008) can materialize the dream of several generations of educators and thinkers in the fields of constructivism, constructionism, learning styles, interests, intrinsic motivation, multiple intelligence, open-learning (or distant learning), and special education.

However, the strength of recent e-learning systems lies in the emergence of Web 2.0 tools, a concept that has developed some new initiatives in education identified as "eLearning 2.0". This adoption has brought about a huge change in the development and use of existing e-learning systems. Since Web 2.0 involves a high degree of user involvement and social networking, it has influenced e-learning systems in terms of pedagogy and delivery.

Anderson (2007) describes six big ideas behind Web 2.0:

- Individual production and User Generated Content
- Harness the power of the crowd
- Data on an epic scale
- Architecture of participation
- Network Effects
- Openness

While not all these ideas have explicit meaning or applications for e-learning, it is notable that Web 2.0 resources or products enhance e-learning systems beyond their ordinary capacity. Some of these products or ideas found in new e-learning systems, according to Bartome (2008) include Wikis, Blogs, RSS reader pages, online office, Social bookmarking, shared documents and podcast, video repositories, social networks and group work spaces. Even though these tools are often used separately online on public websites, people are daily getting acquainted with them.

One system that offers much use of Web 2.0 tools is Scholar 360. Scholar360 is an e-learning solution that provides a network learning environment and uses social tools like wikis, blogs, ePortfolio etc. More details can be found at http://www.scholar360.com/index.php This eLearning system and others like blackboard adopt social tools. Therefore, collaboration is an integral part of them.

Social Approach to E-learning

Anderson (2005) introduced the concept of 'educational social software' and defined it within the context of distance education as:

> "….. networked tools that support and encourage individuals to learn together while retaining individual control over their time, space, presence, activity, identity and relationship."

According to Dalsgaard (2008), it is necessary to move e-learning beyond learning management systems and engage students in an active use of the web (consider an intranet as well) as a resource for their self-governed, problem-based and collaborative activities. With the awareness and availability of Web 2.0 tools, it is argued that social software tools can support a social constructivist approach to e-learning by providing students with personals tools and engaging them in social networks.

E-learning systems based on social approach offer the dynamism and personalisation of the learning experience, this is termed Personal Learning Environment (PLE) using personal tools and social networks. According to (Hannafin, Land, & Oliver, 1999, p. 119) "The individual determines how to proceed based on his or unique needs, perceptions, and experiences, distinguishes known from unknown, identifies resources available to support learning efforts, and formalizes and test personal beliefs." These systems make use of technologies like Blogs, wikis, discussion forums etc to offer collaborative learning among students.

Dalsgaard (2008) argued further that using a social approach to e-learning differs from integrated LMS in terms of focusing on empowerment of students as opposed to management of learning. He stated that the idea is to provide students with a variety of tools for their self-governed and problem based activities; to empower students, and offer them tools for independent work, reflection, construction and collaboration. Adopting a social software approach also provides learners with valuable resources for using the web as a tool in order to develop their understanding and solve problems – whether in school, at work or in their private lives. It has specific relevance in relation to lifelong learning (Friesen & Anderson, 2004).

Analysis of the Tools Used In New E-Learning Systems

There are several open source and commercial e-learning systems that incorporate new tools to enhance the learning experience. Some of the widely used Web 2.0 tools in e-learning systems are:

Wikis

"A wiki is essentially a website constructed in such a way as to allow users to change content on the site" (Graeme, 2006).

Wikis are used in Education in several ways:

- To support collaborative work, substituting old .doc or .pdf documents.
- To produce a course or study corpus in cooperation with all academic stakeholders: lecturers, students, etc.

- To distribute information to students, in order to facilitate the updating of materials by the professor. (Bartome, 2008)

Blogs

Blogs are used as a means of distributing news/information, or sharing personal opinions. Blogs are used in education in the following areas:

- Teachers use blogs as an easy way to produce dynamic learning environments without previous knowledge of html
- Students use blogs as an alternative digital portfolio or as a learning log.
- Ultimately, blogs have been used as support for collaborative work. (Bartome, 2008)

Really simple syndication (RSS) reader pages

RSS is essentially used to get information (updates) directly from a source. Although it is not widely used in most e-learning systems, it is a new way to access information which is based on collective intelligence and collaborative work (Bartome, 2008).

Social bookmarking

Social bookmarking tools can also aid relation between people. The principle here is to bookmark web pages on the web, instead of in the browser. Using RSS, it is also possible to subscribe to people's bookmarks meaning you get notified whenever certain people bookmark a new page (Dalsgaard, 2008).

The above technologies are not in any way all the technologies used in social software. However, since most e-learning systems exist within the confinement of the institution, there are limited implementations of the listed technologies and they are often replaced or implemented as:

- Discussion forums/boards
- Instant messaging
- E-mail
- Documents/video sharing
- Notice boards etc

Impact and Limitation of Existing E-Learning Systems

Distance education in general, and online education in particular, arose in direct response to student needs for convenient access to programs (Larreamendy- Joerns & Leinhardt, 2006). Although e-learning continues to create headaches for administrators and anxious moments for faculty members (Kieman, 2005), the impact of e-learning has been heavily felt in both institutions of learning and the corporate environment. Most especially in the academic environment, the use of technology has created the idea of access to materials anywhere - promoting out of class learning. Schools with e-learning systems have experienced a huge turn around in student involvement in the learning activity. The level of participation, interaction and collaboration within the students and lecturers has also increased with the use social tools in e-learning. According to Kirah (2008), "virtual environments have come to play a central role in the daily routine within companies,… Facebook, blogs and document share sites have a huge impact on what we do, and how we learn and hold on new knowledge".

Limitations

While several institutions have managed to implement one form of e-learning or the other, there have been several challenges to the implementation of e-learning systems as well as limitations and hindrances.

According to Juan (2008), some bottlenecks that affect the adoption of Web 2.0 approach to learning are:

- The rejection of users, personnel and students
- Lack of an incentive system
- The available pre-web 2.0 technology
- Universities show in some cases a culture of aversion to innovation and entrepreneurship

These bottlenecks/fears are serious threats to the implementation and optimal performance of e-learning systems in universities. It should be noted that no e-learning system is designed to replace the lecturers or professors, or to eradicate classroom training. It is considered a tool to assist in the entire pedagogical process, through which effectiveness will be extended. According to (Carliner & Shank, 2008), "Instructors are essential to achieving students' core needs. Instructors are important, not strictly in terms of guidance and feedback, but also in terms of role identification and modelling". Therefore, when lecturers who are supposed to be the facilitators are controversial about the system, it becomes a major problem.

Also the controversy between the administrators, instructors and faculty members has been a major problem of e-learning. Even when the key fears are eliminated and an e-learning system is adopted, it is often underutilized, not well incorporated, or sadly a direct implementation of the traditional pedagogy and often too rigid to institutional changes. Many administrators erroneously believe that a widely used course management system means that the institution is effectively using e – learning, it is not.

Some critics referred to course management systems "e-learning lite" because their fixed design (templated formats) tend to mimic traditional instruction (Carliner & Shank, 2008). It is therefore clear that despite the several successful developments and deployments of e-learning systems with the right pedagogical approach, the achieved objectives are still limited as some issues in the traditional learning method still arises, and students still do not fully maximize the potential of the learning systems.

A Broader Limitation – Our View

While problems arise from the adoption, adaptation and effective use of e-learning systems, it is believed that these systems are designed to enhance the learning processes of the institution, which though majorly concerns the students (learners), is a collaborative effort of all entities within the university system. While e-learning systems find their use considerably in distance learning environments, much emphases has been made for the use within schools, higher institutions and corporate organizations as a means to further enhance and simplify the learning process. The strive to re-condition the learning process as being dynamic and open, rather than fixed and stereotyped – a situation that is considered unsuitable in our rapidly changing world. According to (Carliner and Shank , 2008), "… the competition for higher-ed services is not just the college down the block – it is the proliferation of learning resources, on the job, self directed, certificates, workshops..." It therefore implies that the standard university curriculum which is mostly reflected by the LMS is not all the student needs to become lifelong learners, or equipped to survive in today's demanding world.

It is however important to note that several ideas, innovations and pedagogical adjustment have been made to further enhance e-learning systems with the focus on the learners, two recent and important ones include i)The incorporation of social tools, and ii) The Learner oriented approach. These according to according to Ehlers (2007) and Dalsgaard (2008) are arguable constructive and beneficial. In contrary, we believe it is not a holistic solution (especially in a university setting where most activities are done on campus) to fully enhance the learning activities. We therefore look into how the students can be assisted psychologically, and emotionally to be at rest in order to maximize the benefit e-learning systems (one based on social tools, PLE, learner oriented approach) have to offer, still imbibing the concept of openness and allowing contributions form others.

Considering our case study, apart from the hectic and demanding academic activities which is the main focus (and what most e-learning systems enhance), the students interact and engage in other activities (apparently with other personnel's and units within the school). The impact "non-academic" activities have on the students psychologically and emotional is what has been considered only theoretically, but without any physical solution implemented to address the problem. Considering a scenario where a student visits the medical centre of the institution to receive treatment and he has to take certain blood tests. In most cases as we discovered, the student might be given some treatment (drugs) to take meanwhile the test results are available. Sadly, most student who luckily get better few days after using the drugs never bother to get their test results and ignorantly continue with the daily academic stress. One would wonder when the lab results would ever get to the student, who without knowing his/her detailed health status gives in to the learning process. Similarly, information necessary to aid learning from important departments from the universities like guidance and counselling, campus life etc are best put on notice boards (not online notice boards) where student might never get to use them.

Since these departments are part of the university and can be considered stakeholders in the overall learning process. A system that integrates them into the learning model does more than adding social tools, but provides a learning system that puts more than academic resources at the fingertips of the students (learners) but the entire university in their front.

As an example, a dominant problem in our case study is the issue of graduated students requesting for statements of result, letters of recommendation etc. This process which shouldn't take much time often takes two days or more due to the clearance and verification process. With an extended e-learning system in place, graduated students can within the comfort of their home get the clearance needed from the departments and make their request. If there is a need to make payment, it can be done using online payment options.

The idea here is to have sophisticated system that does more than manage learning activities but also provide a system aids and simplifies administrative services.

Integrated and Enhanced System

Literature has shown that the dream of researchers and developers of e-learning systems is to develop a system which naturally takes into account all factors relevant to a high quality learning experience (Ehlers, 2007). Unfortunately, today's e-learning systems prove different. This is often because too frequently, even innovative institutions fall back on a one-fits all approach , forgetting that students are different and have different needs (Twigg, 2001, in Schulmeister, 2004). Therefore the problems are not only pedagogical or technological, but that other factors that could impact learning are either neglected or not integrated into the system.

At this stage, it crucial to note that the situation described here is one of an institution (a university), other than the case of an e-learning system provider or its variant. However, we believe that based on several discussions and arguments on topics relating to empowering learners using a

learner oriented approach, the ideas proposed here can be applied to other implementations and forms of e-learning systems, especially in situations where the students (learners) are directly involved with other activities that might have some impact on their learning process.

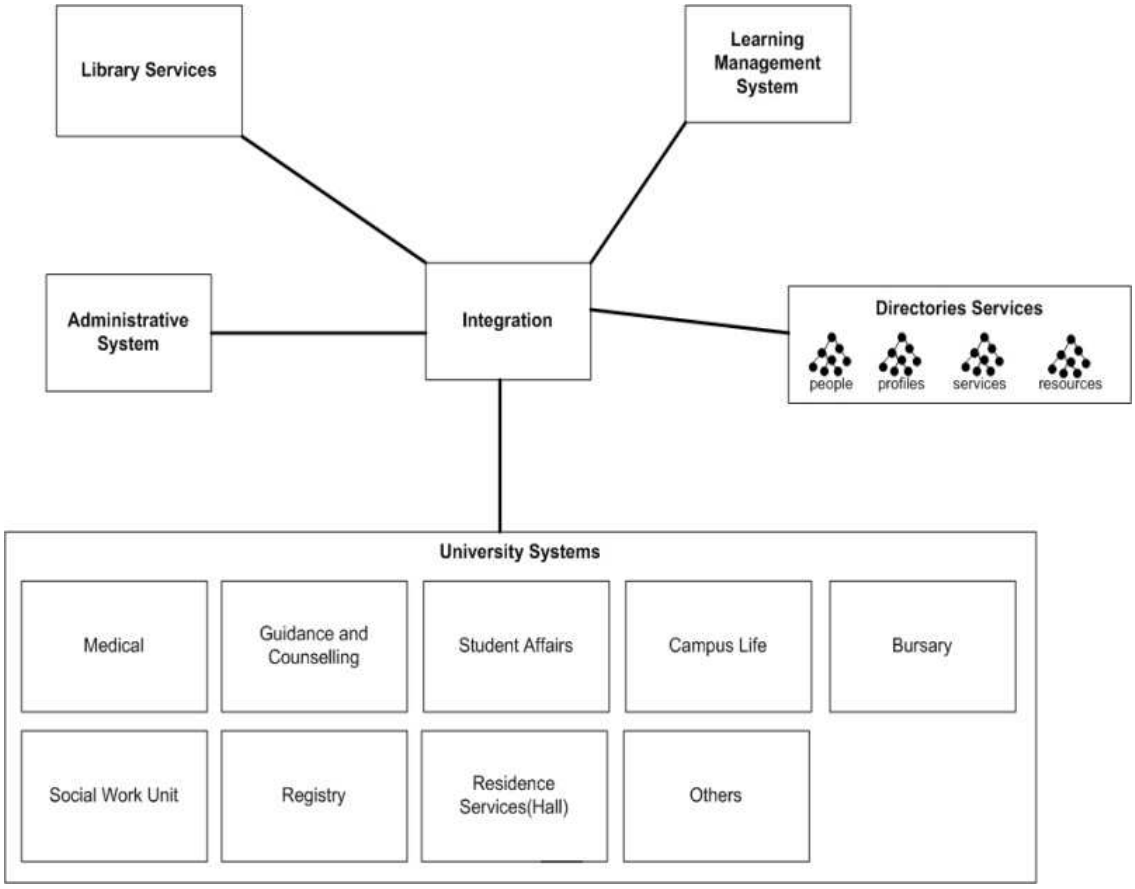

Figure 1: Extended e-learning system

The model in Figure 1 describes the adopted framework for the proposed e-learning system.

The system is made up of the following components:

- Library Services
- Administrative System
- Directory Services
- LMS
- University Services

The components in the model are not necessarily standard; rather they depict the primary subsystems of what can make up an extended learning environment.

Library Service

At the heart of any learning institution is the library, a repository of academic resources. While, most LMSs have a form of a library of learning resources or the other, it is key to integrate the main library in the institution to the e-learning system. This is more like interfacing the Library Management System with the e-learning system, and can be extended to acquire resources from other online sources.

Learning Management System

The basic focus of having an e-learning system has not been ignored. Instead of having the e-learning wholly with the LMS, the LMS manages the learning side (notes creation, gradebook, discussion forums, virtual classrooms etc) and forms part of the entire system.

Directory Services

The bolt of the integration is use of social tools, and since the integrated system is made up of several entities, which might be disparate. Such system would be incomplete without a directory system, where people can locate other people, resources, services and tools that are available for use.

University Services

Every institution like a university consists of several departments that make up the institution. And with a reasonable level of IT adoption, it is most likely that each department will have its own information system which maybe similar or different in terms of technology. These departments constitute part of the learning system, and should be integrated into the e-learning system such that information originating from them is readily available to all users of the system.

Administrative System

Considering the resulting size of this system, one obvious constraint might be manageability. Most e-learning systems come with an administrative system that is used to setup and administer the system. The administrative system shown in the model depicts the component that manages the entire system. This administrative component also extends to individual integrated systems, this means besides the central administrative system, administration of individual units are also considered. This central administration can be done by personnel of the ICT or computer centre of the institution.

The model emphasizes two basic ideas:

- Integration of other non-academic activities/services into the learning system.
- Contribution/participation of non-academic personnel's in the learning process.

Integration of Other Non-Academic Activities/Services into the Learning System

In an attempt to having a holistic learning system, it is important to consider and analyse other components that contribute to or make up the learning process. Especially in the case of a university, several subsystems of the institution have very important role to play in the academic performance of students. Therefore the easier the students can access these systems, the better for them.

Every university has several departments that in most cases use individual and often different systems to carry out their activities. However, with the use of appropriate technologies like SOA and Web services, it becomes possible to integrate different systems and/or enable them to communicate between themselves. These different systems can be merged or integrated into an e-learning system such that important information for students can be made available when needed. This creates a "one stop shop" for students, giving them access to the different information sources, all in one place. During our discussion, a phrase someone used in describing the system "The University on the Screen" paints the overall picture of the objective behind the project. Also, from our questionnaires, we identified few among several departments that provides services that are of

great importance to the students well being and comfort within the university. These departments include the medical service, guidance and counselling, student affairs and the library service.

We observed that these departments are located at several distances from the main academic area, and as a matter of proximity students do not use (visit) them, or when they do, they encounter several difficulties. Therefore the assistance these departments have to offer students is often ignored. As a matter of fact, we realized that students do not receive the necessary information they require to make valid decisions regarding their social or academic life. Therefore, an avenue of opening up the services of these departments to the students in such a way that they are mixed with the learning resources will provide a more convenient way to learn.

Contribution/Participation of Non-Academic Personnel's In the Learning Process

As discussed in the Social Approach to E-learning section, the idea of collaboration in e-learning as been argued from a social context, and this part of our model builds on the concepts proposed by Dalsgaard (2008). According to him, centralized and integrated LMS within a framework of social constructivist pedagogy should play a minor role within the organization of learning. He explained the use of personal tools, an example which is *collaborative tools*. He advocated that collaborative tools will support a closer relationship between students and can help create a shared frame of reference within a group.

However, though his idea of collaborations includes students, lecturers and the external community (collaboration via net), the internal (within the institution) non-academic personnel's are sought of left out. This is not to say he ignored them, the difference is the pedagogical model presented. We are looking at an integrated e-learning system that involves "almost" all active participants in the learning system.

In some universities, administrative personnel often engage in teaching activities and these personnel's, like others have their areas of specialization which can be channelled towards the learning process. Although most of them are not trained instructors, and are probably not used to teaching in classrooms, however, with the use of computer tools like discussion forums, blogs, instant messaging, message boards etc they can effectively contribute to the learning process. In an interview with Anna Kirah, she stated that teamwork is a key factor for successful change, and emphasized the must to teaching collaboration as a tool while learning. She further stated that e-learning and PLEs can be effective ways to learn skills sets, but not unless they can easily be adaptable to collaborative thinking and collaborative work.

The reality of this is that, while the training is left for the lecturers and professors to handle. The truth is a lot of faculty are not all that effective in their classroom teaching (Carliner and Shank, 2008). Most administrative staffs working as accountants, bursars, medical personnel's, counsellors etc in their various departments if given the opportunity can contribute immensely to the learning process. Imagine the medical director of the university participating in a discussion forum created by a medical or nursing student. The same collaborations tools are being used; the only difference is the involvement of a new party. In addition, several authors have validated the need to learn outside the university's curriculum (Anna, 2008; Carliner & Shank, 2008; Dalsgaard, 2008; Ehlers, 2007). And this can be achieved by allowing for contribution, participation and collaboration within all set of people in a learning environment. This way, the "crowd power" is harnessed and a network of learning resources is created and expanded.

Benefits of the Proposed System

According to Carliner and Shank (2008), today's students referred to as "net-gens" and "digital natives" are comfortable dealing with, and learning from multiple resources of information. As

pointed out earlier using the term "The University on the screen", the benefit to accrue from opening up the e-learning system to non-academic/administrative personnel's, and also incorporating other vital services into the learning system includes:

- Students enjoy basic e-learning facilities, and with the use of social tools, collaboration is promoted.
- Out of the class learning is encouraged and students learn from other sources which include their colleagues, lecturers and the non-academic community.
- A large network of resources is developed, and the learning scope increased. Students can subscribe to blogs or forums that are not necessarily in their field.
- Collaboration is greatly encouraged within students, and also within the workers.
- Hindrances like distance, privacy (like in the case of guidance and counselling) etc are eliminated as students enjoy a "personal" one-stop access to both academic and non-academic resources.
- Information dissemination is simplified and greatly enhanced. Students can receive information from several departments just on their screen
- A lasting networking is encouraged, especially among the students and the non-academic community.

Similarly, the benefits of the system to the institution are:

- Easier interaction between the different departments of the institution.
- Easy means of information dissemination between administrative workers and the students.
- Easy means of information dissemination between departments.
- Easy means of collaboration which would aid research and development.
- Easy access to services rendered by other departments with reasonable level of abstraction.

The Social Threat

While the serendipitous adoption of social networking applications, especially amongst youths is the primary leverage of eLearning 2.0 and other system that try to adopt the social approach. Social networking tools pose serious threats that could easily jeopardize the main essence of the adopting system. Facebook, a major social networking site has been summoned to court overall several privacy issues. It was recently reported on BBC, cases of social violence like instigated suicide, abuse and assault, all of which started through the inappropriate use of facebook.

The problem here is one of size and monitoring. Facebook for instance, at present has more than a hundred million users- different people with different mindsets, opinions and attitudes, and compounded with the several tools and resources facebook provides, monitoring who does what, becomes a bit of a problem. Considering, the experience students have with these social networking applications like facebook and MySpace. One could easily conclude that integrating social tools into an e-learning system might just be another facebook within their school walls, and as result promote less learning than more, or lead to wrong learning than right.

The rescue point lies in the paradigm upon which such an e-learning system is built. Having an e-learning system like the one proposed here, means that the core of the system is the learning activity, which could be seen as the learning management system. Other supplementary tools (social tools) like email, instant messaging, blogs, wikis, forums etc are academic inclined, and extra applications like those found on facebook that are not educative, and do not primarily aid or sup-

port the learning process are irrelevant and not considered suitable. However, while not ignoring the fact that students can and would use the tools for non-academic purposes, they can be monitored and their contents can be screened appropriately. For example, a student starting a new blog or discussion forum could have it authorized before use, and subsequent post by other students can be monitored. Furthermore, since this system mirrors the university, the same way a student with a bad conduct in a class can be sent out, or disciplined, so also can discipline be enforced on the application to ensure that the primary purpose is achieved.

Finally, while the possibility of totally eliminating this threat might not be possible, it can be reduced to an acceptable level and managed effectively. Important issues like privacy can be handled as deemed fit by the institutions in accordance to their governing policy.

Hope versus Reality

Due to limited information obtained, it is quite difficult to conclude that such a system like the one proposed is already in use or not. What is certain is that new e-learning solutions are built to leverage the strength of Web 2.0, which implies that collaboration, user content generation etc, are built-in. This is basis for what is described as Personal Learning Environment.

The issue however is that most, if not all of this successful e-learning system focus wholly on academic activities which qualifies them to be learning management systems rather than a complete e-learning solution. Recent research studies have been carried out in the area of analysing the psychological factors that affect e-learning systems, with a view to determining their success and failure rate. The context of psychology here is broad; however we can say that the primary essence is to give students the mental and emotional stability required to effectively learn either in a physical classroom or a virtual learning environment.

We gathered in an informal interview with a student of Sheffield Hallam University, UK that the university uses Blackboard, which in addition to the learning resources provides access to information from non-academic departments. The student also reported that collaboration is open to non-academic personnel's, although they do not frequently participate in the learning process.

The reality is that for an integrated system like the one proposed here, to be implemented, it requires a proper understanding of the activities of the institution. This accounts for the reason why existing e-learning systems like Scholar360, Moodle and Blackboard might not provide a total integrated system. These systems on the contrary provide generic features that can be used in any institution.

The future of this system therefore requires extensive research that will try to develop a more generic and standardized model/framework. The standardization can spread to other systems developed for use in an academic environment, especially the university. Such systems can be reengineered adopting standards like SOA, which could earn them a tag "e-learning ready". The possibility of such reengineering and remodelling of e-learning systems to accommodate (consume) services of associated systems within (and outside) the university makes the proposition more realistic, and the possibilities unlimited.

Further Work

E-learning systems leverage the strength of the internet and information technologies. As stated and discussed earlier, the power of new e-learning systems is based on the use of Web 2.0 tools. These tools provide a friendly and rich learning experience; a term coined by macromedia to describe such applications is RIA (Rich Internet Application), which is implemented using technologies like AJAX and Adobe Flex.

As seen in our case study, most of the departments either do not have any information system (sought of) or the presently used applications are too rigid to be integrated into another. This poses a serious threat, considering the fact that the proposed concept involves merging separate systems together, detailed planning and design becomes very important. With the adoption of new technologies/trends like SOA (Service Oriented Architecture) and Web Services, institutions can begin to adopt the idea of "loosely coupled" applications that can communicate and interact with each other.

It therefore implies that to effectively extend e-learning systems to incorporate other activities outside the traditional academic system, institutions should modularize their applications in such a way that can be integrated into larger systems and can also be used/reused by other applications.

Conclusion

The application of e-learning in different learning environment is continually having a great impact on how people acquire new knowledge, how they access and make use of it. Technology is daily helping to break the several barriers in learning, solving other communication and administrative problems. However, in an attempt to effectively apply e-learning to create a virtual classroom, university or campus, which according to Porter (1997) noted that "A virtual classroom should not be much different from a real classroom or training room", it therefore implies that an e-learning system that would have much impact on the students especially in a university should be comprehensive in the sense that it should present the entire (at least, most important) university system to the students in such a way that they can access learning resources as well as other services that are crucial to their performance.

The system described in this paper seeks to create an e-learning system that is extended and enhanced by merging learning resources with other aiding resources, and also emphasizing the use of collaboration in the learning process.

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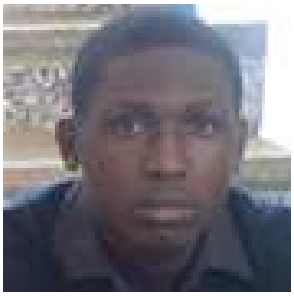

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